

## Consumer Responses to Eco-Friendly Product Claims: The Role of Information Asymmetry and Online Reviews

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### ABSTRACT

Manufacturers have to offer truthful information about their ecofriendly goods to win over consumers. However, some producers lie to consumers by claiming that their goods are completely green. Therefore, we need to conduct studies on consumer behavior and their response to information about green goods. This research investigates the relationship between the asymmetry of information about green products, the quality of online reviews, consumers' trust to believe, review adoption, and their purchase behavior. The survey included 300 consumers who purchased green goods. Partial least squares structural equation modeling evaluated the data for the research, and social media channels shared an online questionnaire for the research. The results show that online review quality positively affects propensity to trust reviews, review adoption, and purchase behavior. We also found that information asymmetry positively influences online review quality, adoption, and green product purchasing behavior. The propensity to trust reviews was beneficial for both purchase behavior and review adoption, and review adoption was helpful for the purchase of green products. Our findings show that information asymmetry highlights the importance of consumer reviews to consumers' decisions to purchase green products. Therefore, consumer feedback and knowledge asymmetry both influence the use of green products. Manufacturers of environmentally friendly goods must adjust their products, production methods, packaging, and advertising to balance perceived value and consumer trust while developing their green marketing strategy.

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## INTRODUCTION

The first step towards becoming a sustainable business is for an organization to recognize how important environmental conservation is. Regulations and rules, which control the global environment and raise consumer awareness to motivate their involvement in its preservation, are the driving forces behind this awareness in many countries. Many businesses are shifting their objectives to become more environmentally conscious (Kim & Seock, 2019). The long-term benefits that environmentally conscious conduct offers to consumers worldwide and the chances it creates to transform environmental issues into advantages are some of the reasons for the green initiative (Singh & Pandey, 2018). In order to attain sustainability and low-carbon, resource-efficient circumstances, technological innovation is necessary for the implementation of a green economy (Fernando et al., 2023). Hawken and Shah (2010) highlighted that the

combination of business and environmental conservation is an activity that involves economic retrieval. A recovery-oriented company's main goal is to provide sustainable goods or advance sustainable societies (Rastogi et al., 2024). Many businesses are taking advantage of possibilities to break into the green industry as consumer demand for environmentally friendly goods rises. According to Knight et al. (2019), emerging green goods will undoubtedly lead to future advancements.

Consumers increasingly understand that environmental degradation has a substantial impact on their quality of life today and in the future (Chang et al., 2021). As a result, many consumers choose eco-friendly items to reduce pollution and environmental harm. Moreover, many consumers no longer prioritize price when making purchases, viewing environmental factors as a measure of life quality (Baldi et al., 2021). According to earlier research, consumers who care about the environment predominantly opt to buy green goods and are prepared to pay a premium for them (Cooke et al., 2022).

People have started to show preferences for eco-friendly products in both developed and developing countries (Pham et al., 2019). A significant number of consumers refrain from buying environmentally friendly items due to the abundance of asymmetric information sources, leading to a sense of doubt and perplexity. Since there are more than 460 approved ecolabels in use worldwide, consumers often place their trust in only a limited number of information sources. Furthermore, people could not buy green items if they did not comprehend them. Lack of knowledge, mistrust of green brand recognition, a lack of product diversity, and insufficient inventory are the most frequent problems faced by consumers of green goods.

According to Wang et al. (2020), consumers do not think businesses are profiting from eco-friendly trends. Consumers are becoming more confused about the legitimacy of enterprises that make environmental claims (Topal et al., 2020). This doubt and uncertainty may damage consumers' confidence, preventing them from making informed purchases. Consequently, corporate green product initiatives have come under scrutiny due to growing consumer mistrust (Szabo & Webster, 2021). For instance, a few consumers we spoke with for our pilot research said that they often check internet reviews before deciding to buy eco-friendly goods, particularly apparel, home appliances, and cosmetics and food items. Consumers go to several community websites for information on autos and electrical devices. Understanding the significance of buying green items can help decrease and avoid environmental difficulties, as over 40% of purchases are ecologically harmful (Joshi & Rahman, 2019). Green product selection may help solve environmental issues (Ogiemwonyi, 2022); as a result, consumers who purchase green goods are essential to environmental preservation. Growing consumer concerns over environmental issues and producer-consumer information asymmetry limit consumers' access to information about green goods (Matthes & Wonneberger, 2014).

In Pakistan, consumer interest in eco-activities such as examining product labels for recycling information and organic certification is gaining traction. While specific data may vary, many Pakistani consumers increasingly look for eco-friendly options and certifications to confirm the authenticity of green products. In line with global sustainability trends, organizations in Pakistan are also making strides toward sustainable consumption, aligning with the United

Nations Sustainable Development Goal (SDG) 12, which promotes responsible consumption and production.

The Pakistan Standards and Quality Control Authority (PSQCA) offers certification for organic products in the country, while private entities, such as the Organic Agriculture Certification Pakistan (OACP), provide labels for organic food items, ensuring compliance with environmentally responsible practices. Pakistani consumers frequently rely on these certifications and also consider online reviews and data to verify that products adhere to ethical standards, such as animal welfare in livestock and minimal use of pesticides in agriculture (Fatima et al., 2024; Ghouse et al., 2024).

Information searches are becoming a common practice among Pakistani consumers since people's confidence in the quality of food is waning. With the help of product reviews, consumers may try to reduce their risk while buying food and other environmentally friendly items (e.g., home appliances, clothing, cosmetics, gadgets, and cars). To solve this issue, consumers research eco-friendly products online and read e-commerce reviews before making a purchase. The digital revolution has completely transformed how consumers and companies make choices (Paul et al., 2024). Consequently, internet reviews have developed into effective tools that buyers may use to decide which green items to buy (Plekhanov et al., 2023). Plekhanov et al. (2023) clarified that since consumers are both actively and passively engaged in offering input to develop green goods, digital transformation may improve consumer experiences (via online reviews). The most reliable information sources for buying green items are online platforms such as social media and word-of-mouth (Bifkovics et al., 2024). However, the product packaging and psychological aspects, rather than information asymmetry directly influencing purchase behavior for green products, have an indirect impact (Chang et al., 2021). When consumers believe the information they receive about green products is reliable and helpful, they are more likely to be interested in, aware of, and have a positive attitude toward them (Luo et al., 2020).

Purchasing green items involves looking up general information about them online, which raises consumer knowledge of environmental preservation (Sharma, 2021). Studies have shown that environmental knowledge (Lavuri et al., 2024), green product information (Adrita, 2020), and online reviews (Chauhan et al., 2021) directly influence consumers' purchasing behaviour for green products. It is yet unknown how information asymmetry affects the acceptance and quality of online reviews for green products. Consumers tend to withhold information about their subjective judgments when making purchases (Phamthi et al., 2024). Furthermore, according to the producers' environmental conservation guidelines, not all environmentally friendly items can recycle, save energy, or lower carbon emissions (Chang et al., 2021).

This research expands the literature on the information asymmetry in materials that consumers examine before purchasing eco-friendly items. We used signalling theory to explain the pertinent components of the study model. This study bridges the knowledge gap on information asymmetry in consumer reviews of green goods left by previous research. Academics report that current research primarily focuses on technological methods (Xia & Niu, 2021), with minimal focus on the impact of online and social media consumer feedback. Moreover,

previous research has neglected behavioural techniques (Ijaz, 2022). On the other hand, opinions differ about the ability of consumer reviews to influence other people's purchases. Despite the existence of asymmetric information in consumer evaluations, WOM does not significantly influence the purchase of green products. The word-of-mouth (WOM) reinforces the association between intention and choices to buy environmentally friendly products (Li & Jaharuddin, 2021).

In the last three years, research on consumer reviews in online media has mostly concentrated on purchases of conventional goods and services (Sun et al., 2023). However, very few studies have addressed the purchase of green products, particularly how businesses use raw materials, processes, and authenticity to create green products. Our original research provides fresh perspectives on the crucial role that perceived trust plays in evaluation and buying decision-making. Research on green product purchase behavior has not yet examined the relationship between the uptake of reviews and consumers' propensity to believe them. By concentrating on information asymmetry and the influence of internet evaluations on consumers contemplating green product purchases, this research seeks to fill this gap. Additionally, this study bridges the gap identified by Chang et al. (2021) by incorporating the impact of online reviews into a research model, thereby validating the relationship between information asymmetry and green product purchase behaviour. The findings have the potential to improve environmental consciousness and natural ecosystem management strategies in the consumer goods industry and to encourage consumers to purchase eco-friendly items to protect the environment. The findings of this research are empirically demonstrating that information asymmetry affects green product purchase behaviour as well as online review variables such as the tendency to trust reviews, the adoption of reviews, and the quality of reviews. Our findings are noteworthy because they close a gap in the body of knowledge about consumers' and businesses' capacities to provide reliable evaluations of environmentally friendly goods. Finally, by offering a model of green product purchase behavior, this work expands on the ideas of signaling theory.

## LITERATURE REVIEW

### Signaling Theory

Signaling theory deals with asymmetric information interactions. For instance, if the receiver of the communication interacts socially or does business with the sender, the sender tries to persuade them that the information they have sent is of the desired caliber. Neither party loses if the sender convinces the receiver the information is good. Conversely, individuals with questionable credibility must substantiate their information with proof (Spence, 1978). According to signaling theory, receivers with a high degree of prior knowledge often disregard unclear information and decline to communicate with its source (Yang et al., 2021). Signalling theory dictates that consumers, being less knowledgeable and at a disadvantage compared to producers in economic research, must evaluate items based on incomplete and ambiguous facts (Spence, 1978). Potential consumers in an asymmetric information environment depend on signals to assess the quality of items designated as green when the informants (producers or consumers acting as reviewers) have extensive knowledge (Kirmani & Rao, 2000). For

instance, Atkinson and Rosenthal (2014) investigated the impact of argument specificity, consumer trust, and eco-label authority using signaling theory.

Signalling theory bases the information asymmetry in this research, which manifests as a discrepancy in reliable information on green goods. The signalling theory connects the information on green product packaging, which aims to persuade consumers that the manufacturer is concerned about environmental issues, with the ultimate goal of boosting sales and enhancing the producer's reputation (Sun et al., 2021). When one consumer knows more about a green product than another, information asymmetry occurs, and consumers use signals to assess the quality of green products (Kirmani & Rao, 2000). Recent studies have employed signalling theory to examine the correlation between purchase intentions for eco-labelled items and trust in green advertising (Sun et al., 2021). Furthermore, Ki and Kim (2022), used signalling theory to study Bayesian equilibrium and found that the ability to process weak signals positively influences consumers' attitudes toward organic food.

### **Information Asymmetry**

Bergh et al. (2018) claim that the study of information asymmetry has been helpful in management science in many ways. To minimize their adverse environmental effects, consumers make green goods with fewer natural resources and waste (Policarpo & Aguiar, 2020). There is information asymmetry when one side of the market has more information. Therefore, information asymmetry is a result of both consumer and company behavior (Pandey et al., 2024). This information asymmetries research focuses on asymmetric firm behaviors in informing consumers about green products (Bergh et al., 2018). Information difficulties include inadequate and asymmetric information. Inadequate information is the absence of comprehensive information, whereas asymmetric information is information that is concealed or disseminated unevenly (Kumar Mangla et al., 2021). As a result of the rise in green products and growing environmental concerns, producers and consumers acquire varying levels of knowledge on green goods. Producers have more access to information about product parameters, including materials and quality, than do consumers (Lee & Kim, 2011). Information asymmetry offers a variety of opportunities and problems, according to signaling theory (Bergh et al., 2018). When the knowledge asymmetry between producers and consumers widens, purchasers value products based on the information or signals they provide (Skaggs & Snow, 2004). If product details are not apparent, Wells et al. (2011) indicated that producers supply product attribute information to consumers via numerous offline and online external channels.

### **Online review quality**

According to the consumer decision-making model developed, consumer decision-making model, consumers typically go through many phases when deciding what to buy. The first step is identifying the requirement, which is then followed by information gathering, weighing options, making a choice, and carrying out a post-purchase assessment. Throughout the information-seeking process, consumers gather information from a variety of sources, including commercials, relatives, and peers, with internet reviews emerging as a key source of information for making purchasing decisions. Based on user evaluations of green goods, this

research provides a thorough presentation of online review quality outcomes (Akram et al., 2023). According to Xu et al. (2013), consumer assessments of the systemic articulation of semantics and communication expertise determine the perceived quality of information. The process of generating, identifying, and interpreting sensory data to characterize and comprehend a situation is known as perception. Consumer assessments of a reviewer's reliability in providing an informed assessment of a product refer to the perceived quality of online reviews (Rosillo-Díaz et al., 2024). As a result, only knowledgeable users can answer the question of whether the information meets expectations (Pooja & Upadhyaya, 2024). The perceived quality of information in internet reviews stimulates consumers' purchasing choices (Zhu et al., 2020).

### **Propensity to Trust**

Herjanto et al. (2021) define trust as the psychological state in which a consumer believes information based on positive expectations of others' attitudes and actions. The tendency to trust reviews is the tendency of the consumer to trust the information provided by manufacturers and to trust the reviews posted by other consumers based on their own experiences using green goods. Earlier research has shown that trust is a kind of consumer behavioral intention regarding how much credibility consumers place in manufacturers (Ladwein & Sánchez Romero, 2021). To increase the trustworthiness of green product information, there must be online reviews from reliable and helpful consumers. These advantages affect consumer satisfaction with evaluations (Thakur, 2016).

Trust is a strong emotion based on ambiguous information. In order to eliminate demand uncertainty and influence consumer purchasing intentions and loyalty, trust is crucial in the study of green products (Rahimnia & Hassanzadeh, 2013). Increasing consumer confidence is crucial in uncertain times to lower their risk perception (Pavlou et al., 2007). Trust affects behavior and judgment via mental and emotional processes. Consequently, we characterize trust as the affective condition of consumers who evaluate whether producers (or other consumers) provide honest feedback.

### **Review Adoption**

Online reviews, available on the websites of businesses or other third parties, serve as evaluations of products purchased after their use (Mudambi & Schuff, 2010). Review adoption, as used in this research, describes how consumers' attitudes toward learning about green products become real actions that may then develop into habits. Researchers have paid close attention to consumer evaluations in digital domains (Thakur, 2016). Electronic gadgets empower people to tell their peers directly about what they know and how they feel about green items. Post-purchase consumer reviews of eco-friendly items on business websites may be seen as a means of fostering relationships between businesses, consumers, and other stakeholders. Consumer reviews include their experience with using green goods. Consumers evaluate products online through electronic word of mouth (eWOM) in digital marketplaces (Thakur, 2016). Earlier research has shown that eWOM has a huge influence on consumer decisions (R.V & Varshney, 2022).

## **Product purchase behavior**

Using many situations, such as consumer demand, preferences, and buying power, the way consumers act when they buy green products has been examined. The theory of planned behavior (TPB) has been applied to study consumer behavior while buying green goods in terms of demand, preferences, and purchasing power. The theory of planned behaviour (TPB) asserts the importance of personality and individual characteristics in determining choice. It is accordingly self-reliant and socially influenced in its decision making taking psychological aspects into consideration (Juschten et al., 2019). Green product choices are consumer activities that focus on the environment, taking into account the overall effects of individual consumption and the ability to change the environment (Lai & Cheng, 2016). After receiving and evaluating information for quality, consumers focus their green product purchase behaviour on environmental preservation. To enhance their understanding and trust in green goods, consumers also evaluate the information they receive.

The evaluation of alternative information (such as the quality of reviews, propensity to trust reviews, and review adoption) may weaken a consumer's desire to buy green items (Rosenbaum & Wong, 2015). Limited product availability has adversely impacted consumers' willingness to acquire green goods, despite their growing concern for the environment and commitment to protecting them via the purchase of green products (Tan et al., 2019). Consumers must thus have a thorough understanding of how goods harm the environment in order to influence their purchase decisions (Ch et al., 2021). Furthermore, buyers prioritize the socioenvironmental advantages of items above their financial advantages (Flores & Jansson, 2022). Economic strategies and social activities aimed at protecting the environment would suffer if consumer preferences to purchase environmentally friendly items remain largely unchanged. Thus, legislators and marketing strategists are concentrating on consumers' choices to buy environmentally friendly goods (Sharma et al., 2023). Despite the growing trend of buying environmentally friendly items, previous studies have shown that consumers' knowledge on how to make environmentally friendly purchases is still lacking (Al-Swidi & Saleh, 2021).

## **Hypothesis Development**

### **Information asymmetry, online review quality, and review adoption**

Information asymmetry has a significant impact on consumers' awareness of green goods (Liu et al., 2021). Using high-quality online information from third parties, consumers can assess green goods and reduce risks and uncertainties (Yang et al., 2016). Consumers tend to trust online evaluations from other consumers who have used green goods more than information from businesses and merchants (Ventre & Kolbe, 2020). Before making an eco-friendly goods purchase, most consumers look for important information. According to Kushwah et al. (2019), knowledge is an important factor in predicting what people would buy. When looking to buy a green product, consumers read product labels and green certifications carefully before using this information to guide their choices (Prell et al., 2020). When consumers find inconsistencies in the information they receive, they often reject products and abandon their purchases. As businesses disclose less specific information about their green goods, we anticipate that

asymmetric information will impact review uptake. Therefore, we propose the following hypotheses:

H1: The information asymmetry has a positive impact on the quality of online reviews.

H2: The information asymmetry has a positive impact on the review adoption.

### **Information asymmetry and product purchase behavior**

Lack of product knowledge and ambiguity can influence consumers when purchasing green goods. By offering comprehensive information on the goods consumers want to purchase, information firms are crucial in resolving information asymmetry issues (Yoo et al., 2015). As a result, many consumers conduct extensive research on products before making a purchase. Consumers require several types of information to assess items. When making purchases, they need sufficient information from manufacturers since their objective is to gather comprehensive, balanced knowledge on green goods (Yang et al., 2021). The exchange of highly asymmetrical information breeds mistrust between buyers and sellers. Ijaz (2022) highlighted that inadequate product information makes it difficult for consumers to make a purchase. Cheung and To (2019) presented two noteworthy conclusions: product quality moderates the link between product information and buying behaviour, and product information plays a crucial role in consumers' decisions to buy green products. Consumers need more empirical data on green goods, especially when it comes to asymmetrical information or real conditions that could influence their purchase decisions. According to Chang et al. (2021), the asymmetry of knowledge about green products has no effect on consumers' decisions to buy them. Furthermore, Hung and Chang (2024) found that the asymmetry of knowledge about green products reinforces the favourable correlation between environmental sentiments and green buying behaviours. Therefore, we propose the following hypotheses:

H3: The information asymmetry has a positive impact on product purchase behaviour.

### **Online review quality and product purchase behavior**

Prior research on the perceived advantages of information sources and their legitimacy has shown that online reviews affect knowledge uptake and increase consumer willingness to purchase environmentally friendly items (Muda & Hamzah, 2021). Consumers benefit from perceived confidence in the quality of reviews because it lessens their vulnerability and anxiety and helps them get over their uncertainty when making decisions about buying green products. This supports the results of Pop et al. (2022), who concluded that trust influences review search behavior. Online content supplied by opinion leaders is more trusted by consumers. The reliability of information sources positively impacts the persuasiveness and evaluation of information (Kumar Mangla et al., 2021). Consequently, a rise in consumer confidence in the caliber of reliable and insightful internet evaluations ought to influence more people to buy environmentally friendly goods (Kumar & Tripathi, 2019). Therefore, we propose the following hypotheses:

H4: The online review quality has a positive impact on product purchase behaviour.



### **Review adoption and product purchase behavior**

Consumers need information from a variety of sources when they make selections to lower the chance of a product purchase going wrong. People can share their product experience and make an informed purchase choice for others through online consumer reviews (Ventre & Kolbe, 2020). Research on green goods shows that consumers use information from online reviews to form their buy intentions (Nguyen & Nguyen, 2020). Online product reviews are a new means by which consumers can learn about products, especially among tech-savvy consumers (Kim & Hyun, 2021). Online communication channels provide independent product information to help consumers understand and evaluate goods, make decisions, and reduce cognitive costs of purchases (Liu et al., 2011). In cyberspace, psychological states often lead consumers to accept information from online evaluations because psychological states may lead to favorable consumer product interactions. Green goods may have an influence on the environment, especially if the purchaser has significant environmental concerns. They are thus completely aware of the risks and harm that come with buying fake environmental goods. Before making a purchase, consumers must carefully consider and assess all of the information that is currently available concerning green goods (Shaheen et al., 2020). Therefore, we propose the following hypotheses:

H5: The review adoption has a positive impact on product purchase behaviour. products.

### **Propensity to trust and product purchase behavior**

Consumer confidence in business information or feedback from other consumers influences their buying behaviour for green products. "Green product purchasing behaviour" refers to the possibility that consumers may purchase items due to environmental concerns (Zhang et al., 2018). Information gleaned from consumer experiences, however, sometimes deviates from the reality of using environmentally friendly items. Consumers develop experiences by integrating information from various sources in their lives and engaging with goods (Shaheen et al., 2020). Nguyen and Nguyen (2020) argued that online evaluations of green products might influence consumers' purchasing intentions. Consumers peruse evaluations of green products to pique their interest, fulfill their general curiosity, and consider various factors before making a purchase. Furthermore, even if a consumer has never indicated interest in buying a green product, they may still learn a lot about it by reading additional reviews. Lui et al. (2018) have linked more product reviews to increased sales and a better reputation for the company. Therefore, we propose the following hypotheses:

H6: The propensity to trust has a positive impact on product purchase behaviour.

### **Propensity to trust reviews and review adoption: a relationship**

Online reviews' legitimacy greatly increases consumer confidence and aids in the uptake of information. This claim elucidates the impact of reliable internet reviews on the adoption of knowledge. Scholars have posited that the establishment of consumer trust and the adoption of information to make a purchase are contingent upon the presence of reputable and beneficial consumer evaluations (Ismagilova et al., 2020). Personal experience is the basis of the perception of trust in consumer information. Because prospective consumers have a natural

affinity for other people who share their interest in a product, information derived from user experiences is seen as reliable and helpful. This view may lessen the likelihood that consumers will be misinformed and lower their responsiveness to information. Information reception requires the reviewer to be trustworthy and reliable (Tennant & Ross-Hellauer, 2020). Chen et al. (2017), suggest that consumers' information may foster more cognitive trust than that of producers. Additionally, the outcomes of green product assessments directly correlate with buyers' emotional and cognitive attitudes. Increased consumer trust leads to the adoption of the assessed data. Therefore, we propose the following hypotheses:

H7: The propensity to trust has a positive impact on review adoption.

### **Quality of online reviews and review adoption: a relationship**

According to Gong et al. (2019), WOM is a more useful and helpful source of product knowledge than traditional marketing communications like advertising or personal selling. Consumers often believe that there are dangers associated with these transactions since they have little opportunity to engage with items and their characteristics. Consequently, prior to making a purchasing choice, buyers usually look for accurate and reliable information via referrals from people who have used the items (Thakur, 2016). Hanus (2019) elucidated the relationship between experience adoption and the reliability of information sources. Consumer perception of the authenticity and accuracy of internet reviews is known as information credibility. In using online reviews as a reference to purchase, it is assumed that consumers recognize their authenticity (Shaheen et al., 2020). The principle of uncertainty reduction suggests that those with access to reliable information can reduce their uncertainty. Consumers who trust internet evaluations tend to take the advice they offer into consideration. However, buyers tend to avoid information from dubious internet evaluations because they are afraid that a product may not meet their expectations (Bae et al., 2017). This means that prior consumer reviews can be a useful source of information when making a product purchase, and therefore it is easier to adopt the knowledge. Therefore, we propose the following hypotheses:

H8: The online review quality has a positive impact on review adoption.

### **Online review quality and propensity to trust**

Consumers look for information from a variety of sources before making a purchase. When buying eco-friendly items, buyers may peruse reviews written by other buyers (or communities), who often provide facts and personal anecdotes. For consumers to assess green goods before making a purchase, product details need to be understandable and significant (Usrey et al., 2020). Because evaluations of product quality may affect consumers' attitudes and behavioral intentions, assessments improve the likelihood that consumers will trust information (Matthes & Wonneberger, 2014). While purchase choices for green products may be influenced by information from a variety of sources (Dangi et al., 2020), the impact of these sources varies depending on how similar the information provider and the recipient are (e.g., fellow members of the green product community). Social identity theory, consumers' perceptions of resemblance may boost trust by decreasing uncertainty. Information quality has been shown to influence consumers' decisions and reactions to information in previous studies. For instance, when a reliable information source communicates well, consumer sentiments

improve (Kumar Mangla et al., 2021). To assist them in making wise selections, the majority of consumers look for accurate and trustworthy information (Kumar Mangla et al., 2021). Consumers are more likely to trust a product when they believe that the information is genuine, trustworthy, useful, and acceptable (Etter et al., 2016). Therefore, we propose the following hypotheses:

H9: The online review quality has a positive impact on propensity to trust.

We proposed nine hypotheses and establish a sustainable model for buying green goods (Figure 1) based on current theory and prior research.

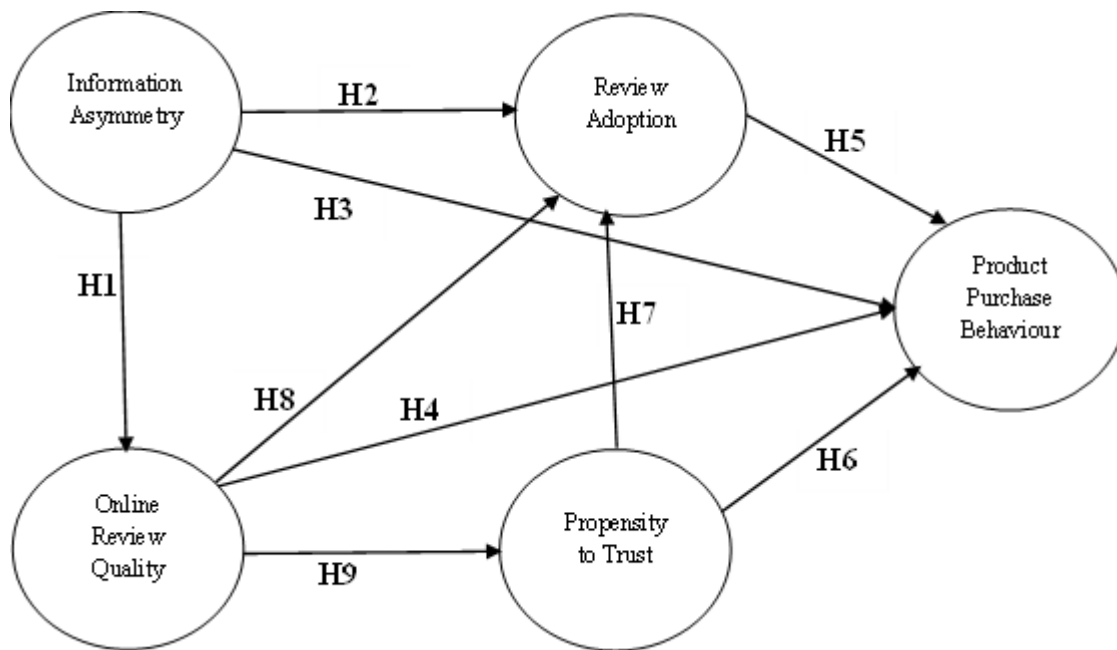


Figure. 1 Conceptual Framework

## RESEARCH METHODOLOGY

### Data Collection

The willingness of consumers to acquire environmentally sustainable items is influenced by their understanding of sustainability, since many Pakistanis are interested about green products. We gathered information by polling consumers who had purchased environmentally friendly goods in Pakistan over the previous three months, including Vehicle, Electronic, and Apparel, to evaluate the study model shown in Figure 1. Google Forms was used to create a research questionnaire, and to guarantee that the respondents completed all the questions, a "necessary" set of conditions was placed next to each question. As a result, every answer was finished. Due to sample requirements, 200 people in total did not reply to the questionnaire. The online poll was disseminated via social media sites including Facebook, Instagram, WhatsApp, and Twitter. Respondents were given an average of 10 to 15 minutes to complete the questionnaire. The questionnaire was anonymous, and respondents were excluded from all identifying information such as names, home addresses, phone numbers and emails to avoid social desirability bias. The questionnaire began with a disclaimer that there were no

right or wrong answers and respondents were asked to answer each item as honestly as they felt (Fisman et al., 2020). As Hair et al. (2019) stated, it is impossible to determine the whole number of Pakistani consumers who buy green goods, so we used a minimum sample size technique of 10 times the number of indicators. First, we chose a minimum sample objective of 150 consumers to improve the goodness-of-fit of the model. A total of 300 responses were gathered following a two-month period, all of which met the pre-established standards for consumers who had recently purchased green products.

## RESULT AND DISCUSSION

### Construct Measurement

The measurements of every variable were obtained from previously published methods. The information asymmetry and product purchase behavior was assessed by Chang et al. (2021). To adopt online review quality, review adoption, and propensity to trust, we used Bae et al. (2017). Each item was assessed using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The findings are summarized in Table 1.

**Table 1 Measurement model - Reliability and Convergent validity**

Constructs	Item Code	Factor Loading	Cronbach's Alpha	CR	AVE
Product information asymmetry	PIA1	0.754	0.819	0.893	0.712
	PIA2	0.819			
	PIA3	0.765			
	PIA4	0.800			
Online review quality	ORQ1	0.901	0.826	0.910	0.758
	ORQ2	0.687			
	ORQ3	0.715			
	ORQ4	0.844			
	ORQ5	0.916			
	ORQ6	0.855			
	ORQ7	0.777			
	ORQ8	0.769			
	ORQ9	0.846			
	ORQ10	0.912			
Review adoption	RA1	0.698	0.845	0.845	0.689
	RA2	0.755			
	RA3	0.816			
Propensity to trust	PT1	0.845	0.798	0.798	0.755

	PT2	0.754			
	PT3	0.856			
	PT4	0.821			
	PPB1	0.815			
Product purchase behaviour	PPB2	0.865	0.867	0.851	0.699
	PPB3	0.912			
	PPB4	0.756			

## Data analysis

The data were tabulated using Microsoft Excel extension and analysis was performed using SPSS and SmartPLS 4. In partial least squares (PLS), a variance based structural equation modeling technique (Sarstedt et al., 2022), reflective and formative models are used in tandem to analyze constructs. In addition, PLS does not require parametric statistical assumptions as the data are normally distributed. All variables in the model had a first order reflective measurement. Common method bias was checked for in data in the first round of testing of the model (Kock, 2015). Validity and reliability tests were carried out after ensuring the data was impartial. In the validation process, convergent and discriminant validity tests were used. Convergent validity testing refers to the loading factor (LF) value in the confirmatory factor analysis and average variance extracted (AVE) tests. An LF (AVE) value of  $\geq 0.70$  ( $\geq 0.50$ ) is advised. If its LF is between 0.60 and 0.70 and its AVE is greater than 0.50, each variable is deemed legitimate. Discriminant validity test is done through the use of heterotrait–monotrait ratio of correlations (HTMT) approach if the correlation values between the variables are less than 0.90 (Henseler et al., 2015). The reliability test is performed using composite reliability (CR) if the CR value is greater than 0.7 but less than 0.95 (Hair et al., 2019). The next stage was to test the structural model. Initially, we looked at the importance of the correlations between the variables.

## Demographic characteristics

Of the 300 replies, 202 (67%) were male and 98 (32%) from females. 122 (40.67%) of the respondents were between the ages of 20 and 30, 89 (29.67%) between 31 and 40, 56 (18.67%) between 41 and 50, 23 (7.67%) between 51 and 60. Regarding education levels, 44.33% hold a bachelor's degree, 29.67% have a Master's, 22% have completed M.Phil., and a small segment, 4%, have attained a Ph.D. degree. When it comes to green product purchases, the majority are inclined toward electronics (36.33%), followed by apparel (27.33%), vehicles (22.67%), and other categories (13.67%) (See Table 2).

**Table 2: Demographic Characteristic (N = 300)**

		Frequency	Percent
Gender	Male	202	67.33
	Female	98	32.67
Age	20-30	122	40.67
	31-40	89	29.67
	41-50	56	18.67
	51-60	23	7.67
	Above 60	10	3.33
Education	Bachelor	133	44.33
	Master's	89	29.67
	M.Phil.	66	22.00
	Ph.D.	12	4.00
Green product purchased category	Vehicle	68	22.67
	Electronic	109	36.33
	Apparel	82	27.33
	Others	41	13.67

### Common Method Bais

In PLS-structural equation modelling (PLS-SEM), the measuring techniques used in SEM investigations result in CMB. We were concerned about participant response bias since the main means of gathering data was via our online questionnaire. There was some range in the replies from the participants. To get around this possible problem, we used the complete collinearity variance inflation factor assessment (FCVIF) method proposed by Kock (2015). Since the latent variables were determined using an aggregate of indicators, this approach was used. For every latent variable in the model, VIFs were produced. VIF values greater than 3.3 point to a collinearity issue, indicating that the model is contaminated by CMB. In the meanwhile, the model is free of CMB if all variables exhibit VIF values that come from complete collinearity ( $VIF \leq 3.3$ ). Table 3 shows that all latent variables generated FCVIF values less than 3.3, demonstrating the lack of bias in the data.

**Table 3: Common method bias**

Constructs	1	2	3	4	5
1. Review Adoption	N.A	2.86	2.51	1.89	2.06
2. Product Purchase Behavior	2.25	N.A	2.33	2.09	1.98
3. Information Asymmetry	1.87	1.83	N.A	2.25	1.88
4. Online Review Quality	2.29	2.51	2.44	N.A	2.68
5. Propensity to Trust	2.23	2.37	2.12	2.87	N.A

### Discriminant validity (HTMT)

The HTMT approach was then used to assess discriminant validity. Making ensuring that a reflective concept's link with its indicator is more significant than any other construct in the PLS pathway model is the goal of a discriminant validity evaluation (Hair et al., 2019). The variable correlation values, as shown by Table 4, fall within the range of 0.69 to 0.88, which are less than 0.90, which suggests that the variables possess discriminant validity.

**Table 4: Heterotrait–monotrait ratio (HTMT)**

Construct	1	2	3	4	5
1. Information Asymmetry	—				
2. Online Review Quality	0.69	—			
3. Review Adoption	0.85	0.88	—		
4. Propensity to Trust	0.76	0.86	0.76	—	
4. Product Purchase Behaviour	0.71	0.77	0.74	0.84	—

$N = 300$ ; all HTMT correlations are within  $-1 < \text{HTMT} < 1$

### Structural Model Analysis

Assessing the structural model that embodies the route model theory was the next stage of the data analysis process. The quality of online reviews, the adoption of reviews, the propensity to trust reviews, and purchase behaviour of green products were the target variables that the structural model's outputs were evaluated for their capacity to predict. The beta coefficient values for H1 were  $\beta_1 = 0.124$ ,  $p\text{-value} < 0.05$ ,  $R^2 = 0.41$ , and  $f^2 = 0.02$ , as shown by Table 5. As a result, H1 was accepted. Moreover, there is a high impact size ( $f^2 = 0.61 > 0.41$ ) associated with the contribution of green product information asymmetry to moderate online review quality. H2 ( $\beta_2 = 0.254$ ;  $p\text{-value} < 0.05$ ) was accepted, leading to the acceptance of H7 ( $\beta_7 = 0.401$ ;  $p\text{-value} < 0.05$ ) and H8 ( $\beta_8 = 0.587$ ;  $p\text{-value} < 0.05$ ). Thus, the asymmetry of information about green products, the propensity to trust, and online review quality all had a positive and substantial impact on the review adoption. The following hypotheses were also accepted: H4 ( $\beta_4 = 0.354$ ;  $p\text{-value} < 0.05$ ), H6 ( $\beta_6 = 0.357$ ;  $p\text{-value} < 0.05$ ), H3 ( $\beta_3 = 0.189$ ;  $p\text{-value} < 0.05$ ), and H5 ( $\beta_5 = 0.298$ ;  $p\text{-value} < 0.05$ ). Purchase behaviour for green products is favourably and substantially influenced by review adoption, asymmetry of green product information, the quality of online reviews, and the propensity to trust. With a beta coefficient value of 0.325 ( $p < 0.05$ ), H9 was accepted.

**Table 5. Structural path coefficients**

Relationship	$\beta$	$t$ - value	$p$ - value	LLCI	ULCI	R <sup>2</sup>	$f^2$
H1: Information Asymmetry → Online Review Quality	0.124	9.58	< 0.05	0.087	0.298	0.41	0.02
H2: Information Asymmetry → Review Adoption	0.254	8.54	< 0.05	0.099	0.357	0.61	0.02
H7: Propensity to Trust → Review Adoption	0.401	7.52	< 0.05	0.217	0.689		0.03
H8: Online Review Quality → Review Adoption	0.587	8.56	< 0.05	0.328	0.789		0.02
H5: Review Adoption → Product Purchase Behaviour	0.298	9.01	< 0.05	0.147	0.487	0.51	0.01
H3: Information Asymmetry → Product Purchase Behaviour	0.189	8.01	< 0.05	0.067	0.222		0.03
H4: Online Review Quality → Product Purchase Behaviour	0.354	6.58	< 0.05	0.128	0.598		0.03
H6: Propensity to Trust → Product Purchase Behaviour	0.357	10.24	< 0.05	0.114	0.477		0.10
H9: Online Review Quality → Propensity to Trust	0.325	5.55	< 0.05	0.157	0.466	0.34	0.02

(N = 300)

## Discussion

### Theoretical Implications

This research examines how information asymmetry and online consumer review variables such as online review quality, trustworthiness, and adoption affect consumer behaviour when it comes to buying green products. There were nine tested hypotheses, and each one showed statistical significance. The asymmetry of green product information has an impact on the adoption, quality, and purchase behaviour of online reviews (Ikhsan et al., 2024). Chang et al. (2021) analysed the findings of studies on information asymmetry's impact on consumers' purchase behaviour for green products, but no previous research has specifically looked at how it affects the quality and uptake of online reviews. Our findings therefore support those of Chang et al. (2021), who claimed that consumer psychology and product packaging are more important factors in influencing green product purchase behaviour than information asymmetry. Furthermore, this research confirms the results of Hung and Chang (2024), who proposed that information asymmetry has a positive moderating role in the association between green shopping behaviour and environmental sentiments.

When consumers do not know enough about green goods, they look for information from a variety of sources including the internet before making a purchase. Consumers research green items online, reading reviews and testimonies from other green product buyers. When they are certain that a green product is what they want, they buy it. Consumers are thus certain that the vendor is knowledgeable and experienced in selling green products. Consumers who are confident in the reputations of well-known brands and enterprises are more likely to buy green items right away and spend less time looking for comprehensive information. Consumers may verify information they get from manufacturers (such as green product specs) with proof posted on business websites or via reviews on social media. These results support the idea that



signalling theory which describes the interactions between producers and consumers explains consumer behaviour when it comes to buying green products and that consumers use signalling theory as a cognitive process to evaluate the quality of products and their willingness to accept latest information.

Furthermore, green consumers learn that manufacturers are aware of the green raw materials used in manufacturing if they affix eco-labels to electronic products and automobiles. Even for items that advertise themselves as green, eco-labels are uncommon, which shows that there is knowledge asymmetry. Consumers feel that buying environmentally friendly cars and electronics is a sort of environmental duty, even when there are gaps in knowledge asymmetry. On the other hand, consumers may easily get accurate information on the "greenness" of things they buy, such as electronics, apparel, and vehicles by visiting different websites and reading online reviews.

According to our findings, the quality of online reviews influences the adoption of reviews, people's propensity to believe reviews, and people's purchase decisions about green items. According to our research, the veracity of consume revaluations for green products supports the information supplied by the companies. As a result, while making judgements on the consumption of green goods, consumers often accept and trust the information from reviews. Our results corroborate those of Khare et al. (2022), who showed that celebrity endorsements encourage consumer participation with green clothing purchases and online community evaluations enhance consumers' trust and propensity to buy green items.

We find that review adoption and online purchase behaviour are influenced by the propensity to trust reviews. Consumers who are comfortable with the information found in internet reviews alter their purchase habits and stick with it when they buy green items going forward. Lastly, review adoption influences consumers' propensity to buy environmentally friendly goods. Reviews from other consumers serve as indications of other consumers' propensity to adopt these signals that is, to purchase environmentally friendly products by providing information. This conclusion is consistent with that of Sh. Ahmad et al. (2022) , who defined green self-efficacy as consumers' belief in their capacity to take environmental action and digest information. Green self-efficacy thus affects consumers' decisions to buy green products.

### **Practical Implications**

These findings have several useful implications for businesses and governments. First, in the development phases of green initiatives, businesses claiming to generate green goods should integrate the notions of perceived value and consumer trust. This may persuade businesses to put reputation, quality of products, marketing, and environmental responsibility first. To get consumers' attention, businesses also need to effectively communicate the material characteristics of their products. Businesses may also fully use social media platforms like Facebook, Instagram, and Twitter to find out what consumers want and how to best develop and satisfy their need for environmentally friendly goods. Second, to boost consumer confidence in green goods and lower their perception of potential hazards, corporations may use merchants' expertise as efficient information sources. Third, our findings show how urgently businesses must increase consumer trust in environmentally friendly goods by

communicating openly and consistently about the details of their offerings. Fourth, by encouraging consumers to provide authentic material and evaluate the efficacy of green products, businesses may use doable green marketing techniques to build trust.

By doing these actions, consumers may establish a solid foundation of knowledge that the items they use are eco-friendly. Based on in-depth interviews with several consumers, corporations should serve as the main sources of information for consumers. To encourage consumer trust in green goods, companies should share information on waste management techniques. We concluded that despite businesses' claims of eco-friendly packaging, consumers continue to be sceptical about green items. Consumers believe that these labels should provide accurate and clear information. Thus, in addition to a green label, CSR initiatives and offering comprehensive product details on business websites are reliable and successful communication methods.

In terms of the government's role, we advise that it function as a regulator by closely observing businesses that make environmentally friendly goods and fostering consumer confidence by issuing formal assurances. Second, the Pakistani government has continuously pushed enterprises to adopt a circular economy strategy in relation to the SDGs. Third, as green goods are more in demand worldwide and are seen to be more competitive, the government need to incentivize businesses to produce them to promote circular economic strategies. To make environmentally friendly goods more accessible to consumers and to minimise production costs, the government must support the circular economy by offering subsidies to enterprises.

## CONCLUSION AND POLICY IMPLICATION

In the context of green goods, the study's findings add to the signalling theory of information asymmetry. Based on online review quality, confidence in reviews, and review adoption all of which represent consumer perceptions of consuming green goods a model of purchase behaviour for green items was created. We also included the paucity of information on green goods with review elements provided by internet users to our analysis of the effects of information asymmetry. Signalling theory, which describes the link between the four criteria that encourage the consumption of green goods, served as the foundation for the development of the study model. This research fills the gap in the information asymmetry, online review quality, confidence in reviews, and adoption of reviews-based green product purchase behaviour model. Notwithstanding its meticulous construction, several constraints exist, including disparities in the procurement patterns of environmentally conscious healthcare and personal hygiene items, home appliances, electronics, and automobiles.

### Limitation and future directions

Our study was conducted in Pakistan. We recommend that samples from developing nations with less ecologically friendly policies be used by future study. Furthermore, to improve validity, proportionate and varied sampling must be considered. It is also important to look at how different green product categories' purchase habits vary from one another. Future studies should include environmental quality knowledge and attitudes towards the environment as internal consumer determinants to broaden the purchase behaviour model for green items.

When it comes to meeting their demands, consumers who are conscious of environmental quality often look for information on green goods.

## REFERENCES

- Adrita, U. W. (2020). Consumers' actual purchase behaviour towards green product: a study on Bangladesh. *International Journal of Business Innovation and Research*, 21(3), 311-323. <https://doi.org/10.1504/IJBIR.2020.105923>
- Akram, M. W., Abbas, A., Khan, I. A., & Ahmad, M. F. (2023). Influence of Social Media on Consumers' Online Purchasing Habits During: The COVID-19 Pandemic in Pakistan. *International Journal of Management Research and Emerging Sciences*, 13(1). <https://doi.org/10.56536/ijmres.v13i1.396>
- Al-Swidi, A., & Saleh, R. M. (2021). How green our future would be? An investigation of the determinants of green purchasing behavior of young citizens in a developing Country. *Environment, Development and Sustainability*, 23(9), 13436-13468. <https://doi.org/10.1007/s10668-020-01220-z>
- Atkinson, L., & Rosenthal, S. (2014). Signaling the Green Sell: The Influence of Eco-Label Source, Argument Specificity, and Product Involvement on Consumer Trust. *Journal of Advertising*, 43(1), 33-45. <https://doi.org/10.1080/00913367.2013.834803>
- Bae, S. J., Lee, H., Suh, E.-K., & Suh, K.-S. (2017). Shared experience in pretrip and experience sharing in posttrip: A survey of Airbnb users. *Information & Management*, 54(6), 714-727. <https://doi.org/https://doi.org/10.1016/j.im.2016.12.008>
- Baldi, L., Trentinaglia, M. T., Mancuso, T., & Peri, M. (2021). Attitude toward environmental protection and toward nature: How do they shape consumer behaviour for a sustainable tomato? *Food Quality and Preference*, 90, 104175. <https://doi.org/https://doi.org/10.1016/j.foodqual.2021.104175>
- Bergh, D. D., Ketchen, D. J., Orlandi, I., Heugens, P. P. M. A. R., & Boyd, B. K. (2018). Information Asymmetry in Management Research: Past Accomplishments and Future Opportunities. *Journal of Management*, 45(1), 122-158. <https://doi.org/10.1177/0149206318798026>
- Bifkovich, B., Malota, E., Faria, L. N., & Martinez, L. F. (2024). Customer-to-Customer Communication: Referral of High and Low Involvement Products through Stimulated Word-of-Mouth. *Journal of Promotion Management*, 30(2), 204-226. <https://doi.org/10.1080/10496491.2023.2253235>
- Ch, T. R., Awan, T. M., Malik, H. A., & Fatima, T. (2021). Unboxing the green box: an empirical assessment of buying behavior of green products. *World Journal of Entrepreneurship, Management and Sustainable Development*, 17(4), 690-710. <https://doi.org/10.1108/WJEMSD-12-2020-0169>
- Chang, T.-W., Chen, Y.-S., Yeh, Y.-L., & Li, H.-X. (2021). Sustainable consumption models for customers: investigating the significant antecedents of green purchase behavior from the perspective of information asymmetry. *Journal of Environmental Planning and Management*, 64(9), 1668-1688. <https://doi.org/10.1080/09640568.2020.1837087>
- Chauhan, H., Pandey, A., Mishra, S., & Rai, S. K. (2021). Modeling the predictors of consumers' online purchase intention of green products: the role of personal

- innovativeness and environmental drive. *Environment, Development and Sustainability*, 23(11), 16769-16785. <https://doi.org/10.1007/s10668-021-01337-9>
- Chen, X., Huang, Q., & Davison, R. M. (2017). Economic and Social Satisfaction of Buyers on Consumer-to-Consumer Platforms: The Role of Relational Capital. *International Journal of Electronic Commerce*, 21(2), 219-248. <https://doi.org/10.1080/10864415.2016.1234285>
- Cheung, M. F. Y., & To, W. M. (2019). An extended model of value-attitude-behavior to explain Chinese consumers' green purchase behavior. *Journal of Retailing and Consumer Services*, 50, 145-153. <https://doi.org/https://doi.org/10.1016/j.jretconser.2019.04.006>
- Cooke, P., Nunes, S., Oliva, S., & Lazzeretti, L. (2022). Open Innovation, Soft Branding and Green Influencers: Critiquing 'Fast Fashion' and 'Overtourism'. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(1).
- Dangi, N., Gupta, S. K., & Narula, S. A. (2020). Consumer buying behaviour and purchase intention of organic food: a conceptual framework. *Management of Environmental Quality: An International Journal*, 31(6), 1515-1530. <https://doi.org/10.1108/MEQ-01-2020-0014>
- Etter, M., Colleoni, E., Illia, L., Meggiorin, K., & D'Eugenio, A. (2016). Measuring Organizational Legitimacy in Social Media: Assessing Citizens' Judgments With Sentiment Analysis. *Business & Society*, 57(1), 60-97. <https://doi.org/10.1177/0007650316683926>
- Fatima, M., Ahmed, Q. M., & Paracha, O. (2024). Examining sustainable consumption patterns through green purchase behavior and digital media engagement: a case of Pakistan's postmillennials. *foresight*, 26(5), 867-885. <https://doi.org/10.1108/FS-12-2022-0177>
- Fernando, Y., Tseng, M.-L., Wahyuni-Td, I. S., Sroufe, R., & Mohd-Zailani, N. I. A. (2023). Blockchain technology adoption for carbon trading and energy efficiency: ISO manufacturing firms in Malaysia. *International Journal of Logistics Research and Applications*, 26(11), 1556-1577. <https://doi.org/10.1080/13675567.2022.2090527>
- Fisman, R., Gladstone, K., Kuziemko, I., & Naidu, S. (2020). Do Americans want to tax wealth? Evidence from online surveys. *Journal of Public Economics*, 188, 104207. <https://doi.org/https://doi.org/10.1016/j.jpubeco.2020.104207>
- Flores, P. J., & Jansson, J. (2022). SPICe—Determinants of consumer green innovation adoption across domains: A systematic review of marketing journals and suggestions for a research agenda. *International Journal of Consumer Studies*, 46(5), 1761-1784. <https://doi.org/https://doi.org/10.1111/ijcs.12810>
- Ghouse, S. M., Shekhar, R., Ali Sulaiman, M. A. B., & Azam, A. (2024). Green purchase behaviour of Arab millennials towards eco-friendly products: the moderating role of eco-labelling. *The Bottom Line, ahead-of-print(ahead-of-print)*. <https://doi.org/10.1108/BL-08-2023-0246>
- Gong, S., Wang, W., & Li, Q. (2019). Marketing communication in the digital age: online ads, online WOM and mobile game adoptions. *Nankai Business Review International*, 10(3), 382-407. <https://doi.org/10.1108/NBRI-12-2018-0073>

- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. J. H., United Kingdom. (2019). Multivariate data analysis. Cengage learning. 633.
- Hanus, M. D. (2019). Distinguishing User Experience When Customizing in a User-Generated Content Advertising Campaign and Subsequent Effects on Product Attitudes, Reactance, and Source Credibility. *Journal of Interactive Advertising*, 19(1), 74-85. <https://doi.org/10.1080/15252019.2018.1548316>
- Hawken, P., & Shah, K. (2010). *The ecology of commerce: A declaration of sustainability*. Harper Business New York.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Herjanto, H., Amin, M., & Purington, E. F. (2021). Panic buying: The effect of thinking style and situational ambiguity. *Journal of Retailing and Consumer Services*, 60, 102455. <https://doi.org/https://doi.org/10.1016/j.jretconser.2021.102455>
- Hung, C.-Z., & Chang, T.-W. (2024). Have I purchased the right product? Consumer behavior under corporate greenwash behavior. *Journal of Consumer Behaviour*, 23(3), 1102-1113. <https://doi.org/https://doi.org/10.1002/cb.2263>
- Ijaz, A. (2022). The Role of Religiosity on Information Asymmetry Concerns and Search Behaviour In UK's Convenience Food Market: A Focus on Muslim Minorities. *Journal of Food Products Marketing*, 28(1), 49-67. <https://doi.org/10.1080/10454446.2022.2040683>
- Ikhsan, R. B., Fernando, Y., Gui, A., & Fernando, E. (2024). The power of online reviews: Exploring information asymmetry and its impact on green product purchasing behavior. *International Journal of Consumer Studies*, 48(3), e13050. <https://doi.org/https://doi.org/10.1111/ijcs.13050>
- Ismagilova, E., Slade, E., Rana, N. P., & Dwivedi, Y. K. (2020). The effect of characteristics of source credibility on consumer behaviour: A meta-analysis. *Journal of Retailing and Consumer Services*, 53, 101736. <https://doi.org/https://doi.org/10.1016/j.jretconser.2019.01.005>
- Joshi, Y., & Rahman, Z. (2019). Consumers' Sustainable Purchase Behaviour: Modeling the Impact of Psychological Factors. *Ecological Economics*, 159, 235-243. <https://doi.org/https://doi.org/10.1016/j.ecolecon.2019.01.025>
- Juschten, M., Jiricka-Pürner, A., Unbehauen, W., & Hössinger, R. (2019). The mountains are calling! An extended TPB model for understanding metropolitan residents' intentions to visit nearby alpine destinations in summer. *Tourism Management*, 75, 293-306. <https://doi.org/https://doi.org/10.1016/j.tourman.2019.05.014>
- Khare, A., Sadachar, A., & Chakraborty, S. (2022). Influence of celebrities and online communities on Indian consumers' green clothing involvement and purchase behavior. *Journal of Fashion Marketing and Management: An International Journal*, 26(4), 676-699. <https://doi.org/10.1108/JFMM-02-2021-0033>
- Ki, H., & Kim, J.-Y. (2022). Sell green and buy green: A signaling theory of green products. *Resource and Energy Economics*, 67, 101266. <https://doi.org/https://doi.org/10.1016/j.reseneeco.2021.101266>

- Kim, J. M., & Hyun, S. (2021). Differences in online reviews caused by distribution channels. *Tourism Management*, 83, 104230.  
<https://doi.org/https://doi.org/10.1016/j.tourman.2020.104230>
- Kim, S. H., & Seock, Y.-K. (2019). The roles of values and social norm on personal norms and pro-environmentally friendly apparel product purchasing behavior: The mediating role of personal norms. *Journal of Retailing and Consumer Services*, 51, 83-90.  
<https://doi.org/https://doi.org/10.1016/j.jretconser.2019.05.023>
- Kirmani, A., & Rao, A. R. (2000). No Pain, No Gain: A Critical Review of the Literature on Signaling Unobservable Product Quality. *Journal of Marketing*, 64(2), 66-79.  
<https://doi.org/10.1509/jmkg.64.2.66.18000>
- Knight, H., Megicks, P., Agarwal, S., & Leenders, M. A. A. M. (2019). Firm resources and the development of environmental sustainability among small and medium-sized enterprises: Evidence from the Australian wine industry. *Business Strategy and the Environment*, 28(1), 25-39. <https://doi.org/https://doi.org/10.1002/bse.2178>
- Kock, N. J. I. J. o. e.-C. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *II(4)*, 1-10.
- Kumar Mangla, S., Börühan, G., Ersoy, P., Kazancoglu, Y., & Song, M. (2021). Impact of information hiding on circular food supply chains in business-to-business context. *Journal of Business Research*, 135, 1-18.  
<https://doi.org/https://doi.org/10.1016/j.jbusres.2021.06.013>
- Kumar, R., & Tripathi, V. (2019). Green Advertising: Examining the Role of Celebrity's Credibility Using SEM Approach. *Global Business Review*, 23(2), 440-459.  
<https://doi.org/10.1177/0972150919862660>
- Kushwah, S., Dhir, A., & Sagar, M. (2019). Ethical consumption intentions and choice behavior towards organic food. Moderation role of buying and environmental concerns. *Journal of Cleaner Production*, 236, 117519.  
<https://doi.org/https://doi.org/10.1016/j.jclepro.2019.06.350>
- Ladwein, R., & Sánchez Romero, A. M. (2021). The role of trust in the relationship between consumers, producers and retailers of organic food: A sector-based approach. *Journal of Retailing and Consumer Services*, 60, 102508.  
<https://doi.org/https://doi.org/10.1016/j.jretconser.2021.102508>
- Lai, C. K. M., & Cheng, E. W. L. (2016). Green purchase behavior of undergraduate students in Hong Kong. *The Social Science Journal*, 53(1), 67-76.  
<https://doi.org/https://doi.org/10.1016/j.soscij.2015.11.003>
- Lavuri, R., Parida, R., & Singh, S. (2024). Unveiling ways to examine the purchase intension of green products in emerging markets. *Benchmarking: An International Journal*, 31(5), 1385-1401. <https://doi.org/10.1108/BIJ-06-2022-0379>
- Lee, K.-H., & Kim, J.-W. (2011). Integrating Suppliers into Green Product Innovation Development: an Empirical Case Study in the Semiconductor Industry. *Business Strategy and the Environment*, 20(8), 527-538.  
<https://doi.org/https://doi.org/10.1002/bse.714>
- Li, S., & Jaharuddin, N. S. (2021). Influences of background factors on consumers' purchase intention in China's organic food market: Assessing moderating role of word-of-

- mouth (WOM). *Cogent Business & Management*, 8(1), 1876296.  
<https://doi.org/10.1080/23311975.2021.1876296>
- Liu, C., Zheng, Y., & Cao, D. (2021). An analysis of factors affecting selection of organic food: Perception of consumers in China regarding weak signals. *Appetite*, 161, 105145. <https://doi.org/https://doi.org/10.1016/j.appet.2021.105145>
- Liu, Q., Karahanna, E., & Watson, R. T. (2011). Unveiling user-generated content: Designing websites to best present customer reviews. *Business Horizons*, 54(3), 231-240.  
<https://doi.org/https://doi.org/10.1016/j.bushor.2011.01.004>
- Lui, T.-W., Bartosiak, M., Piccoli, G., & Sadhya, V. (2018). Online review response strategy and its effects on competitive performance. *Tourism Management*, 67, 180-190.  
<https://doi.org/https://doi.org/10.1016/j.tourman.2018.01.014>
- Luo, B., Sun, Y., Shen, J., & Xia, L. (2020). How does green advertising skepticism on social media affect consumer intention to purchase green products? *Journal of Consumer Behaviour*, 19(4), 371-381. <https://doi.org/https://doi.org/10.1002/cb.1818>
- Matthes, J., & Wonneberger, A. (2014). The Skeptical Green Consumer Revisited: Testing the Relationship Between Green Consumerism and Skepticism Toward Advertising. *Journal of Advertising*, 43(2), 115-127.  
<https://doi.org/10.1080/00913367.2013.834804>
- Muda, M., & Hamzah, M. I. (2021). Should I suggest this YouTube clip? The impact of UGC source credibility on eWOM and purchase intention. *Journal of Research in Interactive Marketing*, 15(3), 441-459. <https://doi.org/10.1108/JRIM-04-2020-0072>
- Mudambi, S. M., & Schuff, D. (2010). Research Note: What Makes a Helpful Online Review? A Study of Customer Reviews on Amazon.com. *MIS Quarterly*, 34(1), 185-200. <https://doi.org/10.2307/20721420>
- Nguyen, Y. T. H., & Nguyen, H. V. (2020). An alternative view of the millennial green product purchase: the roles of online product review and self-image congruence. *Asia Pacific Journal of Marketing and Logistics*, 33(1), 231-249.  
<https://doi.org/10.1108/APJML-10-2019-0612>
- Ogiemwonyi, O. (2022). Factors influencing generation Y green behaviour on green products in Nigeria: An application of theory of planned behaviour. *Environmental and Sustainability Indicators*, 13, 100164.  
<https://doi.org/https://doi.org/10.1016/j.indic.2021.100164>
- Pandey, S., Mittal, S., & Chawla, D. (2024). Tackling consumer information asymmetry and perceived uncertainty for luxury re-commerce through seller signals. *Journal of Retailing and Consumer Services*, 79, 103736.  
<https://doi.org/https://doi.org/10.1016/j.jretconser.2024.103736>
- Paul, J., Ueno, A., Dennis, C., Alamanos, E., Curtis, L., Foroudi, P.,... Wirtz, J. (2024). Digital transformation: A multidisciplinary perspective and future research agenda. *International Journal of Consumer Studies*, 48(2), e13015.  
<https://doi.org/https://doi.org/10.1111/ijcs.13015>
- Pavlou, P. A., Liang, H., & Xue, Y. (2007). Understanding and Mitigating Uncertainty in Online Exchange Relationships: A Principal-Agent Perspective. *MIS Quarterly*, 31(1), 105-136. <https://doi.org/10.2307/25148783>

- Pham, T. H., Nguyen, T. N., Phan, T. T. H., & Nguyen, N. T. (2019). Evaluating the purchase behaviour of organic food by young consumers in an emerging market economy. *Journal of Strategic Marketing*, 27(6), 540-556.  
<https://doi.org/10.1080/0965254X.2018.1447984>
- Phamthi, V. A., Nagy, Á., & Ngo, T. M. (2024). The influence of perceived risk on purchase intention in e-commerce—Systematic review and research agenda. *International Journal of Consumer Studies*, 48(4), e13067.  
<https://doi.org/https://doi.org/10.1111/ijcs.13067>
- Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6), 821-844.  
<https://doi.org/https://doi.org/10.1016/j.emj.2022.09.007>
- Policarpo, M. C., & Aguiar, E. C. (2020). How self-expressive benefits relate to buying a hybrid car as a green product. *Journal of Cleaner Production*, 252, 119859.  
<https://doi.org/https://doi.org/10.1016/j.jclepro.2019.119859>
- Pooja, K., & Upadhyaya, P. (2024). What makes an online review credible? A systematic review of the literature and future research directions. *Management Review Quarterly*, 74(2), 627-659. <https://doi.org/10.1007/s11301-022-00312-6>
- Pop, R.-A., Săplăcan, Z., Dabija, D.-C., & Alt, M.-A. (2022). The impact of social media influencers on travel decisions: the role of trust in consumer decision journey. *Current Issues in Tourism*, 25(5), 823-843. <https://doi.org/10.1080/13683500.2021.1895729>
- Prell, M., Zanini, M. T., Caldieraro, F., & Migueles, C. (2020). Sustainability certifications and product preference. *Marketing Intelligence & Planning*, 38(7), 893-906.  
<https://doi.org/10.1108/MIP-12-2019-0616>
- R.V, S., & Varshney, S. (2022). Investigating combined effect of WOM and eWOM: role of message valence. *Journal of Consumer Marketing*, 39(2), 180-190.  
<https://doi.org/10.1108/JCM-08-2020-4047>
- Rahimnia, F., & Hassanzadeh, J. F. (2013). The impact of website content dimension and e-trust on e-marketing effectiveness: The case of Iranian commercial saffron corporations. *Information & Management*, 50(5), 240-247.  
<https://doi.org/https://doi.org/10.1016/j.im.2013.04.003>
- Rastogi, T., Agarwal, B., & Gopal, G. (2024). Exploring the nexus between sustainable marketing and customer loyalty with the mediating role of brand image. *Journal of Cleaner Production*, 440, 140808.  
<https://doi.org/https://doi.org/10.1016/j.jclepro.2024.140808>
- Rosenbaum, M. S., & Wong, I. A. (2015). Green marketing programs as strategic initiatives in hospitality. *Journal of Services Marketing*, 29(2), 81-92.  
<https://doi.org/10.1108/JSM-07-2013-0167>
- Rosillo-Díaz, E., Muñoz-Rosas, J. F., & Blanco-Encomienda, F. J. (2024). Impact of heuristic–systematic cues on the purchase intention of the electronic commerce consumer through the perception of product quality. *Journal of Retailing and Consumer Services*, 81, 103980.  
<https://doi.org/https://doi.org/10.1016/j.jretconser.2024.103980>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2022). Partial Least Squares Structural Equation Modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of Market*



- Research* (pp. 587-632). Springer International Publishing.  
[https://doi.org/10.1007/978-3-319-57413-4\\_15](https://doi.org/10.1007/978-3-319-57413-4_15)
- Sh. Ahmad, F., Rosli, N. T., & Quoquab, F. (2022). Environmental quality awareness, green trust, green self-efficacy and environmental attitude in influencing green purchase behaviour. *International Journal of Ethics and Systems*, 38(1), 68-90.  
<https://doi.org/10.1108/IJOES-05-2020-0072>
- Shaheen, M., Zeba, F., Chatterjee, N., & Krishnankutty, R. (2020). Engaging customers through credible and useful reviews: the role of online trust. *Young Consumers*, 21(2), 137-153. <https://doi.org/10.1108/YC-01-2019-0943>
- Sharma, A. P. (2021). Consumers' purchase behaviour and green marketing: A synthesis, review and agenda. *International Journal of Consumer Studies*, 45(6), 1217-1238.  
<https://doi.org/https://doi.org/10.1111/ijcs.12722>
- Sharma, K., Aswal, C., & Paul, J. (2023). Factors affecting green purchase behavior: A systematic literature review. *Business Strategy and the Environment*, 32(4), 2078-2092. <https://doi.org/https://doi.org/10.1002/bse.3237>
- Singh, G., & Pandey, N. (2018). The Determinants of Green Packaging that Influence Buyers' Willingness to Pay a Price Premium. *Australasian Marketing Journal*, 26(3), 221-230.  
<https://doi.org/10.1016/j.ausmj.2018.06.001>
- Skaggs, B. C., & Snow, C. C. (2004). The Strategic Signaling of Capabilities by Service Firms in Different Information Asymmetry Environments. *Strategic Organization*, 2(3), 271-291. <https://doi.org/10.1177/1476127004045253>
- Spence, M. (1978). 18 - JOB MARKET SIGNALING *Uncertainty in Economics* (pp. 281-306). Academic Press. <https://doi.org/https://doi.org/10.1016/B978-0-12-214850-7.50025-5>
- Sun, B., Kang, M., & Zhao, S. (2023). How online reviews with different influencing factors affect the diffusion of new products. *International Journal of Consumer Studies*, 47(4), 1377-1396. <https://doi.org/https://doi.org/10.1111/ijcs.12915>
- Sun, Y., Luo, B., Wang, S., & Fang, W. (2021). What you see is meaningful: Does green advertising change the intentions of consumers to purchase eco-labeled products? *Business Strategy and the Environment*, 30(1), 694-704.  
<https://doi.org/https://doi.org/10.1002/bse.2648>
- Szabo, S., & Webster, J. (2021). Perceived Greenwashing: The Effects of Green Marketing on Environmental and Product Perceptions. *Journal of Business Ethics*, 171(4), 719-739.  
<https://doi.org/10.1007/s10551-020-04461-0>
- Tan, C. N. L., Ojo, A. O., & Thurasamy, R. (2019). Determinants of green product buying decision among young consumers in Malaysia. *Young Consumers*, 20(2).  
<https://doi.org/10.1108/YC-12-2018-0898>
- Tennant, J. P., & Ross-Hellauer, T. (2020). The limitations to our understanding of peer review. *Research Integrity and Peer Review*, 5(1), 6. <https://doi.org/10.1186/s41073-020-00092-1>
- Thakur, R. (2016). Understanding Customer Engagement and Loyalty: A Case of Mobile Devices for Shopping. *Journal of Retailing and Consumer Services*, 32, 151-163.  
<https://doi.org/https://doi.org/10.1016/j.jretconser.2016.06.004>

- Topal, İ., Nart, S., Akar, C., & Erkollar, A. (2020). The effect of greenwashing on online consumer engagement: A comparative study in France, Germany, Turkey, and the United Kingdom. *Business Strategy and the Environment*, 29(2), 465-480. <https://doi.org/https://doi.org/10.1002/bse.2380>
- Usrey, B., Palihawadana, D., Saridakis, C., & Theotokis, A. (2020). How Downplaying Product Greenness Affects Performance Evaluations: Examining the Effects of Implicit and Explicit Green Signals in Advertising. *Journal of Advertising*, 49(2), 125-140. <https://doi.org/10.1080/00913367.2020.1712274>
- Ventre, I., & Kolbe, D. (2020). The Impact of Perceived Usefulness of Online Reviews, Trust and Perceived Risk on Online Purchase Intention in Emerging Markets: A Mexican Perspective. *Journal of International Consumer Marketing*, 32(4), 287-299. <https://doi.org/10.1080/08961530.2020.1712293>
- Wang, D., Walker, T., & Barabanov, S. (2020). A psychological approach to regaining consumer trust after greenwashing: the case of Chinese green consumers. *Journal of Consumer Marketing*, 37(6), 593-603. <https://doi.org/10.1108/JCM-06-2019-3257>
- Wells, J. D., Valacich, J. S., & Hess, T. J. (2011). What Signal Are You Sending? How Website Quality Influences Perceptions of Product Quality and Purchase Intentions. *MIS Quarterly*, 35(2), 373-396. <https://doi.org/10.2307/23044048>
- Xia, J., & Niu, W. (2021). Carbon-reducing contract design for a supply chain with environmental responsibility under asymmetric information. *Omega*, 102, 102390. <https://doi.org/https://doi.org/10.1016/j.omega.2020.102390>
- Xu, J., Benbasat, I., & Cenfetelli, R. T. (2013). Integrating Service Quality with System and Information Quality: An Empirical Test in the E-Service Context. *MIS Quarterly*, 37(3), 777-794. <http://www.jstor.org/stable/43825999>
- Yang, J., Sarathy, R., & Lee, J. (2016). The effect of product review balance and volume on online Shoppers' risk perception and purchase intention. *Decision Support Systems*, 89, 66-76. <https://doi.org/https://doi.org/10.1016/j.dss.2016.06.009>
- Yang, M., Chen, H., Long, R., Wang, Y., Hou, C., & Liu, B. (2021). Will the public pay for green products? Based on analysis of the influencing factors for Chinese's public willingness to pay a price premium for green products. *Environmental Science and Pollution Research*, 28(43), 61408-61422. <https://doi.org/10.1007/s11356-021-14885-4>
- Yoo, C. W., Parameswaran, S., & Kishore, R. (2015). Knowing about your food from the farm to the table: Using information systems that reduce information asymmetry and health risks in retail contexts. *Information & Management*, 52(6), 692-709. <https://doi.org/https://doi.org/10.1016/j.im.2015.06.003>
- Zhang, L., Li, D., Cao, C., & Huang, S. (2018). The influence of greenwashing perception on green purchasing intentions: The mediating role of green word-of-mouth and moderating role of green concern. *Journal of Cleaner Product`lion*, 187, 740-750. <https://doi.org/https://doi.org/10.1016/j.jclepro.2018.03.201>
- Zhu, L., Li, H., Wang, F.-K., He, W., & Tian, Z. (2020). How online reviews affect purchase intention: a new model based on the stimulus-organism-response (S-O-R) framework. *Aslib Journal of Information Management*, 72(4), 463-488. <https://doi.org/10.1108/AJIM-11-2019-0308>